Table 3

Selected Spatial Extent Studies

Study Type	Reference	Comments
Bee Biomonitoring	Bromenshenk et al. 1985 Bromenshenk et al. 1991	kriging maps of As and Cd in bees over a 7500 square km region; bee biomass and As content over a Vashon Island transect of sampling sites
Sediments	Crecelius 1974	As and Sb in surface sediments in Puget Sound and regional lakes
Vegetation	Crecelius and Piper 1973	Pb and Cu in Douglas Fir tree needles
	Heilman and Ekuan 1977	numerous trace elements measured in garden vegetables from 70 regional gardens
Precipitation Chemistry	Larson et al. 1975	single-storm (synoptic) precipitation chemistry monitoring study over region downwind of Tacoma Smelter
	Harrison et al. 1977	evaluation of single-storm precipitation chemistry monitoring data for source of acid rain and trace elements
	Knudson et al. 1977	multivariate statistical analysis of single-storm precipitation chemistry monitoring data and identification of affected downwind region
	Carpenter et al. 1978	two-year monitoring of arsenic in rainfall at Puget Sound sampling locations from Olympia to near Anacortes

	Vong et al. 1986 Moseholm 1986 Vong et al. 1987 Vong, Larson et al. 1988 Vong, Moseholm, et al. 1988 Peterson II 1991	monitoring of regional precipitation chemistry in 14 storms over a period before and after closure of the Tacoma Smelter (Smelter Closure Study); classification of monitoring locations by source of impacts; evaluation of downwind region with changes after smelter closure
Soil Sampling	Heilman and Ekuan 1977	numerous trace elements measured in soils from 70 regional gardens
	Lowry 1983 Simpson 1983	As and Cd in regional garden soils; kriging analysis of soils data
	PHSKC and Glass 2000	Vashon-Maury Island footprint sampling study
	Washington State Department of Ecology 2002	King County Mainland footprint sampling study
	TPCHD 2003	Pierce County footprint sampling study
Air Modeling	PSAPCA 1981	H.E. Cramer SO2 modeling study; As and Cd deposition modeling study (using ISC-LT model)
	Vong 1982	sulfate wet deposition modeling study
	PEDCo 1983 USEPA 1983c	regional ambient arsenic modeling for USEPA NESHAPs rulemaking
	Luecken et al. 1989	As and sulfate deposition modeling study (using MPADD model)
Long-Range Transport	Lutrick 1971	integrating nephelometer study located ground-level plume impacts two to six miles from the Tacoma Smelter
	Crecelius 1974	ambient particulate arsenic concentration in Seattle highly

		correlated with wind direction
	Dethier 1979	precipitation chemistry monitoring at Copper Lake, 80 km NE of Tacoma Smelter
	Faulkner 1987	precipitation chemistry monitoring along the U.S./British Columbia border
	Welch et al. 1992	precipitation chemistry monitoring at Cascade Mountain lakes at time of smelter closure